

# IVC-810/800 product bulletin



# How the IVC-810/800 works...

## The IVC format

Many helical scan formats have been tried in recent years and introduced in the variety of recorders now on the market. However, none of these formats were explicitly designed for color. They were, without exception, created in a monochrome environment and later reworked and modified to produce some measure of helical scan color capability.

At IVC, an entirely different tack was taken. Two years ago, a rigid set of requirements was laid down by IVC's founders for a completely NEW KIND OF HELICAL SCAN RECORDER — one representing state-of-the-art performance from helical scan technology. Original IVC criteria demanded color capability at the outset — color capability approaching that of broadcast quadruplex recorders. The IVC criteria required a format that was able to record NTSC-type signals directly on the tape — and repro-

duce them with excellent time base stability and no missing picture information.

Such a demanding format is now available in the IVC-810, with a monochrome version of the SAME recorder (IVC-800) available by the deletion of one plug-in printed circuit board (the recorder's color reproduce board). Interestingly, since standards are the SAME on both color and monochrome machines, color pictures recorded on the monochrome version contain ALL NTSC color information. IVC-800 tapes can be played back, IN COLOR, on an IVC-810 or IVC-800 that has been modified by the addition of the color reproduce board.

The technology used in the IVC Format requires a much shorter "scan stripe" and much slower tape speed than other helical scan machines. IVC's 12-inch, widely spaced video scan stripes are produced by a small head drum at a tape speed of only 6.9 ips. Several innovations were developed by IVC to bring this slow-speed/short-scan combination to a level of superb technical performance.

One of these innovations is a unique method devised for preventing audio-video crosstalk. It allows video recording

to take place over the ENTIRE width of the tape — right over audio and control tracks. Full-width video tracks compact video information, greatly improve the efficiency of tape utilization.

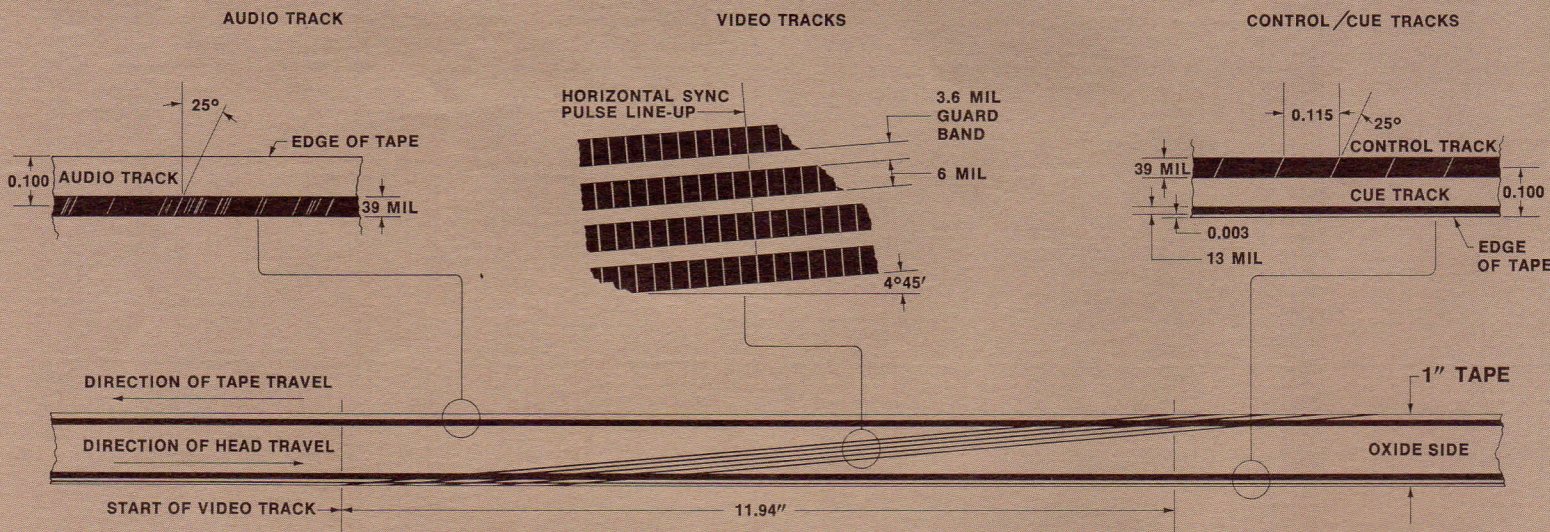
## Alpha wrap

Another important innovation in IVC Format recorders is Alpha tape wrap. With Alpha wrap (as opposed to Omega wrap used on most other helical recorders), tape is wound 360° around the video head drum. With Alpha wrap, head-to-tape contact approaches 100% — results in 100% recording of picture information with the only missing information occurring during vertical blanking intervals. It gives IVC-810/800 playbacks MORE picture information than any other single-head helical recorder.

## Pulse interval modulation

A third, and extremely significant IVC innovation, is a newly patented method of signal modulation. IVC's modulation system, called pulse interval modulation (PIM), provides significant improvement in signal-to-noise and frequency response over commonly used FM recording. It makes use of recently introduced, highly matched INTEGRATED CIRCUITS

## IVC TAPE FORMAT



## IVC-810/800 specifications

### GENERAL

#### Tape speed:

6.91 ips  $\pm 0.15\%$

#### Tape and reel:

1" wide, "A" wrap tape on NAB hub 8" maximum size reel

#### Case mounted:

24" x 11 1/2" x 13 1/2", 78 pounds

#### Rack mounted (standard EIA rack):

19" x 12 1/4" x 9 5/8" deep (including cable clearance), 59 pounds

### Controls:

PUSHBUTTONS: play, record, rewind, fast forward, stop

KNOBS: on/off, tracking, tension, color lock, video, cue and audio record levels

### Power:

110 to 130VAC, 60Hz; 350 watts maximum; machines equipped for 230VAC, 50Hz available on special order

### VIDEO

#### Monochrome bandwidth:

30Hz to 4.2MHz +1dB, -4dB

#### Color bandwidth (luminance channel):

30Hz to 2.4MHz +1dB, -3dB

#### Signal-to-noise:

43dB peak-to-peak signal to rms noise

### Differential gain:

maximum deviation of 10 IRE units (10% to 90% APL)

### Input level:

0.5 to 2.0V peak-to-peak (composite input)

### Input signal:

any standard 60 field, monochrome or NTSC color signal; 75 ohm termination in recorder

### Outputs:

two outputs, one for monochrome and one for color; both are adjusted for 1V composite, positive going video into 75 ohm line



— which are particularly adaptable to PIM technique. Integrated circuits in the PIM system permit excellent carrier balance in the recorder's modulator and limiter circuitry, thus eliminating moire effects.

#### Air-bearing tape support

An important feature of IVC Format recorders is air-bearing support of tape around the video head drum. Positive air pressure, generated by the IVC scanning assembly, literally lifts tape from the head drum. It allows such smooth tape movement around the drum (with very good time base stability) that NTSC encoded color signals can be recorded and reproduced without resorting to pilot tone systems—or converting color to another entirely different system to compensate for recorder inadequacies.

#### Metered tape drive

Another important feature on IVC-810/800 recorders is the location of the capstan. Unlike other helical scan recorders with "puller" type capstans, IVC's capstan is located AHEAD of the video head drum. It meters tape into the scanning assembly at a precise rate, with tension supplied by the take-up reel. It eliminates

the self-energizing brake action found in "puller" capstan machines, where HIGH tension is found at the input side of the tape drive. IVC's tape metering capstan provides a smooth, even flow of tape going around the video head drum—with low tension at the input side.

#### Wide guard bands

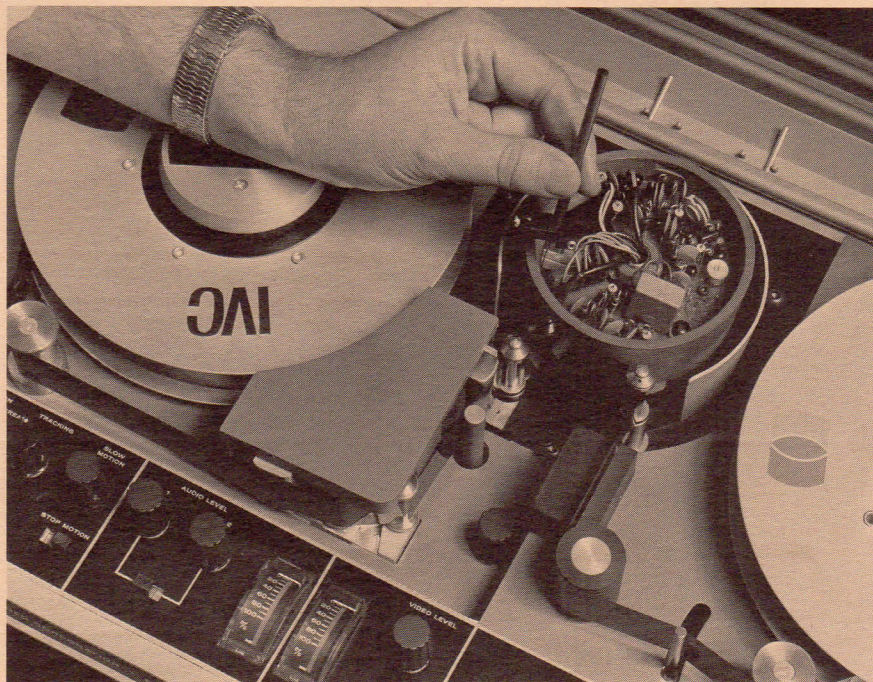
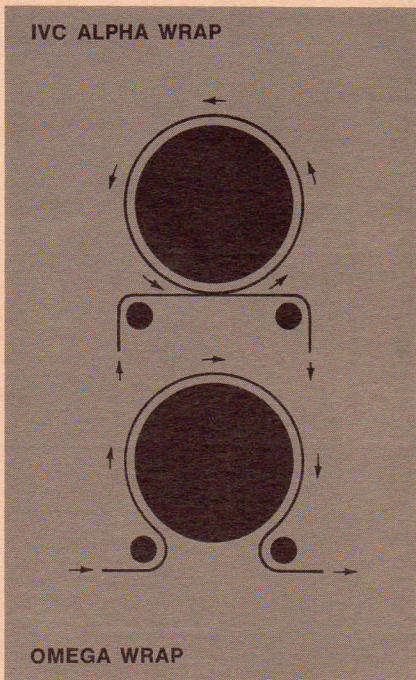
The distance between recorded video tracks in a helical scan format is a very important factor in tape interchangeability and the need for precision in a recorder's alignment. If guard bands (spaces) between recorded video tracks are too narrow, recorders with slightly different alignment (or a small amount of misalignment) will mistrack. On the IVC-810/800, due to the IVC Format, this danger has been substantially reduced. Extremely wide guard bands of 3.6 mils (WIDER than in any other helical scan format) are allowed between the short-scan, 6.0-mil-wide video tracks. This results in excellent tape interchangeability and enduring recorder alignment not found on other helical scan machines.

#### Stop & slow motion

Stop motion is included as a standard feature on all IVC-810/800's. Optionally, slow motion is also available.

#### Easy operation

All who have used the IVC-810/800 are amazed by its clean operational simplicity. It is scarcely more difficult to operate than a normal audio recorder. Once tape is threaded through its fixed-guide tape path, interlocked electrical controls and dynamic braking safeguard against any misdirected button pushing. The recorder simply will not run wild or jam up. Electrical and recorder adjustment controls are few and functional. Brief instruction on the use of each control prepares anyone (even non-technical persons) for successful operation of the recorder. When the recorder has to be moved quite often (as in CATV remotes or multiple user preview situations), its compactness and mobility are highly appreciated.



#### Stability:

horizontal jitter is less than 0.5% of picture width with monitors of 7.5 milliseconds horizontal a/c time constant; vertical crossover is adjustable to hold within 5 microseconds

#### AUDIO (two channels)

##### Bandwidth:

Channel 1: 75Hz to 10kHz,  $\pm 4$ dB  
Channel 2: 250Hz to 7.5kHz,  $\pm 4$ dB

##### Signal-to-noise (both channels):

40dB, relative to 3% distortion at 400Hz

#### Interchannel crosstalk:

—40dB minimum

#### Flutter and wow:

less than 0.25% rms

#### Inputs (both channels):

microphone input is 0.2 millivolts minimum, 200 ohms nominal; line input is  $-20$ dBm to  $+16$ dBm ( $+4$ dBm nominal), 600 ohms balanced or unbalanced

#### Outputs (both channels):

adjusted for  $+4$ dBm output into 600 ohm terminated line;  $+20$ dBm clipping level

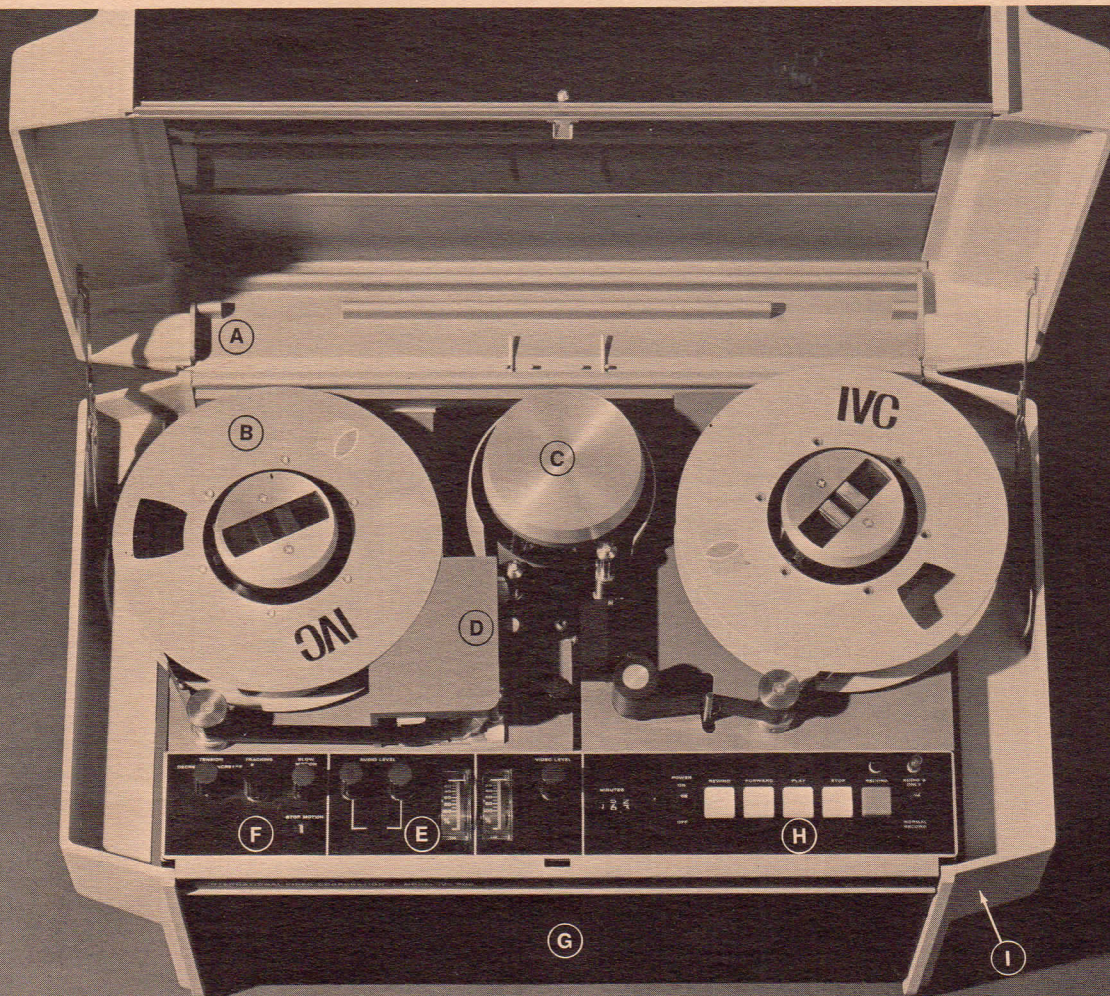
Photo of IVC head drum with transformer-coupled scanning assembly that also provides positive air for support of tape around the video head drum. Picture shows field-replaceable head cartridge being removed and replaced (a 30-second operation); head is guaranteed for a minimum 500-hour life. Unique IVC-810/800 tape metering capstan is seen in the center of picture. Level meters and controls (also stop and slow motion controls) are seen in the lower portion of the picture.



# IVC-810/800...

color/monochrome videotape recorder for CATV, broadcast preview and other professional applications

- A. Choice of portable style with detachable cover that can be closed for noise-free operation . . . or standard 19" EIA rack mount (includes mounting hardware)
- B. IVC Format allows one full hour of recording on small-sized 8" reel of tape . . . uses the widest guard bands of any helical format to assure machine-to-machine compatibility
- C. Helical scan assembly features unique "Alpha" tape wrap and field-replaceable video head with guaranteed 500-hour life (replaceable in 30 seconds)
- D. Tape metering capstan at input side of tape path reduces tension around head drum . . . provides better tape speed control and stability
- E. Easy-to-operate recorder adjustment and level controls . . . make operation as simple as many audio tape recorders, even for non-technical personnel . . . provide control for both audio channels
- F. Stop motion is standard on all recorders . . . built-in slow motion is available as an option
- G. Internal construction features: 4-motor, servo-controlled design that assures fast lock-up and stabilization, provides fast forward and rewind of full reel in less than 90 seconds . . . completely transistorized electronic circuitry with patented Pulse Interval Modulation for improved frequency response and signal-to-noise . . . all modular circuitry for easy servicing and replacement if needed
- H. Full electrical pushbutton control of all transport modes . . . permits remote control of all functions, even dial access capability . . . stop mode has smooth-acting dynamic braking
- I. Plug-in color reproduce board is the only difference between color and monochrome models . . . all monochrome machines record NTSC-type color and only need addition of this board to play back color



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